Adult Immunization Update 2009

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Recommended Immunization Schedule for Persons Aged 0 Through 6 Years—United States • 2009

For those who fall behind or start late, see the catch-up schedule

Vaccine ▼ Age ▶	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B[1]	HepB	HepB		*see footnote 1*	HepB						
Rotavirus[2]			RV	RV	*RV*[2]						
Diphtheria, Tetanus, Pertussis[3]			DTaP	DTaP	DTaP	*see footnote 3*	DTaP				DTaP
Haemophilus influenzae type b[4]			Hib	Hib	*Hib*[4]	Hib					
Pneumococcal[5]			PCV	PCV	PCV	PCV				PPSV	
Inactivated Poliovirus			IPV	IPV	IPV						IPV
Influenza[6]					Influenza (Yearly)						
Measles, Mumps, Rubella[7]						MMR		*see footnote 7*			MMR
Varicella[8]						Varicella		*see footnote 8*			Varicella
Hepatitis A[9]						HepA (2 doses)				HepA Series	
Meningococcal[10]										MCV	

Range of recommended ages (yellow)

Certain high-risk groups (purple)

This schedule indicates the recommended ages for routine administration of currently licensed vaccines, as of December 1, 2008, for children aged 0 through 6 years. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. Licensed combination vaccines may be used whenever any component of the combination is indicated and other components are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations, including high-risk conditions: http://www.cdc.gov/vaccines/pubs/acip-list.htm. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at http://www.vaers.hhs.gov or by telephone, 800-822-7967.

1. Hepatitis B vaccine (HepB). ***(Minimum age: birth)***

At birth:

- Administer monovalent HepB to all newborns before hospital discharge.
- If mother is hepatitis B surface antigen (HBsAg)-positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
- If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine mother's HBsAg status as soon as possible and, if HBsAg-positive, administer HBIG (no later than age 1 week).

After the birth dose:

- The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1 or 2 months. The final dose should be administered no earlier than age 24 weeks.
- Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg (anti-HBs) after completion of at least 3 doses of the HepB series, at age 9 through 18 months (generally at the next well-child visit).

4-month dose:

- Administration of 4 doses of HepB to infants is permissible when combination vaccines containing HepB are administered after the birth dose.

2. Rotavirus vaccine (RV). ***(Minimum age: 6 weeks)***

- Administer the first dose at age 6 through 14 weeks (maximum age: 14 weeks 6 days). Vaccination should not be initiated for infants aged 15 weeks or older (i.e., 15 weeks 0 days or older).
- Administer the final dose in the series by age 8 months 0 days.
- If Rotarix® is administered at ages 2 and 4 months, a dose at 6 months is not indicated.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP). ***(Minimum age: 6 weeks)***

- The fourth dose may be administered as early as age 12 months, provided at least 6 months have elapsed since the third dose.
- Administer the final dose in the series at age 4 through 6 years.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib). ***(Minimum age: 6 weeks)***

- If PRP-OMP (PedvaxHIB® or Comvax® [HepB-Hib]) is administered at ages 2 and 4 months, a dose at age 6 months is not indicated.
- TriHiBit® (DTaP/Hib) should not be used for doses at ages 2, 4, or 6 months but can be used as the final dose in children aged 12 months or older.

5. Pneumococcal vaccine. ***(Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPSV])***

- PCV is recommended for all children aged younger than 5 years. Administer 1 dose of PCV to all healthy children aged 24 through 59 months who are not completely vaccinated for their age.
- Administer PPSV to children aged 2 years or older with certain underlying medical conditions (see *MMWR* 2000;49[No. RR-9]), including a cochlear implant.

6. Influenza vaccine. ***(Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])***

- Administer annually to children aged 6 months through 18 years.
- For healthy nonpregnant persons (i.e., those who do not have underlying medical conditions that predispose them to influenza complications) aged 2 through 49 years, either LAIV or TIV may be used.
- Children receiving TIV should receive 0.25 mL if aged 6 through 35 months or 0.5 mL if aged 3 years or older.
- Administer 2 doses (separated by at least 4 weeks) to children aged younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.

7. Measles, mumps, and rubella vaccine (MMR). ***(Minimum age: 12 months)***

- Administer the second dose at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 28 days have elapsed since the first dose.

8. Varicella vaccine. ***(Minimum age: 12 months)***

- Administer the second dose at age 4 through 6 years. However, the second dose may be administered before age 4, provided at least 3 months have elapsed since the first dose.
- For children aged 12 months through 12 years the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.

9. Hepatitis A vaccine (HepA). ***(Minimum age: 12 months)***

- Administer to all children aged 1 year (i.e., aged 12 through 23 months). Administer 2 doses at least 6 months apart.
- Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits.
- HepA also is recommended for children older than 1 year who live in areas where vaccination programs target older children or who are at increased risk of infection. See *MMWR* 2006;55(No. RR-7).

10. Meningococcal vaccine. ***(Minimum age: 2 years for meningococcal conjugate vaccine [MCV] and for meningococcal polysaccharide vaccine [MPSV])***

- Administer MCV to children aged 2 through 10 years with terminal complement component deficiency, anatomic or functional asplenia, and certain other high-risk groups. See *MMWR* 2005;54(No. RR-7).
- Persons who received MPSV 3 or more years previously and who remain at increased risk for meningococcal disease should be revaccinated with MCV.

The Recommended Immunization Schedules for Persons Aged 0 Through 18 Years are approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (http://www.aap.org), and the American Academy of Family Physicians (http://www.aafp.org).

DEPARTMENT OF HEALTH AND HUMAN SERVICES • CENTERS FOR DISEASE CONTROL AND PREVENTION

Recommended Immunization Schedule for Persons Aged 7 Through 18 Years—United States • 2009

For those who fall behind or start late, see the schedule below and the catch-up schedule

Vaccine ▼ Age ▶	7–10 years	11–12 years	13–18 years
Tetanus, Diphtheria, Pertussis[1]	*see footnote 1*	Tdap	Tdap
Human Papillomavirus[2]	*see footnote 2*	HPV (3 doses)	HPV Series
Meningococcal[3]	MCV	MCV	MCV
Influenza[4]		Influenza (Yearly)	
Pneumococcal[5]		PPSV	
Hepatitis A[6]		HepA Series	
Hepatitis B[7]		HepB Series	
Inactivated Poliovirus[8]		IPV Series	
Measles, Mumps, Rubella[9]		MMR Series	
Varicella[10]		Varicella Series	

Range of recommended ages

Catch-up immunization

Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed vaccines, as of December 1, 2008, for children aged 7 through 18 years. Any dose not administered at the recommended age should be administered at a subsequent visit, when indicated and feasible. Licensed combination vaccines may be used whenever any component of the combination is indicated and other components are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the relevant Advisory Committee on Immunization Practices statement for detailed recommendations, including high-risk conditions: http://www.cdc.gov/vaccines/pubs/acip-list.htm. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at http://www.vaers.hhs.gov or by telephone, 800-822-7967.

1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap). ***(Minimum age: 10 years for BOOSTRIX® and 11 years for ADACEL®)***
- Administer at age 11 or 12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoid (Td) booster dose.
- Persons aged 13 through 18 years who have not received Tdap should receive a dose.
- A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose; however, a shorter interval may be used if pertussis immunity is needed.

2. Human papillomavirus vaccine (HPV). ***(Minimum age: 9 years)***
- Administer the first dose to females at age 11 or 12 years.
- Administer the second dose 2 months after the first dose and the third dose 6 months after the first dose (at least 24 weeks after the first dose).
- Administer the series to females at age 13 through 18 years if not previously vaccinated.

3. Meningococcal conjugate vaccine (MCV).
- Administer at age 11 or 12 years, or at age 13 through 18 years if not previously vaccinated.
- Administer to previously unvaccinated college freshmen living in a dormitory.
- MCV is recommended for children aged 2 through 10 years with terminal complement component deficiency, anatomic or functional asplenia, and certain other groups at high risk. See *MMWR* 2005;54(No. RR-7).
- Persons who received MPSV 5 or more years previously and remain at increased risk for meningococcal disease should be revaccinated with MCV.

4. Influenza vaccine.
- Administer annually to children aged 6 months through 18 years.
- For healthy nonpregnant persons (i.e., those who do not have underlying medical conditions that predispose them to influenza complications) aged 2 through 49 years, either LAIV or TIV may be used.
- Administer 2 doses (separated by at least 4 weeks) to children aged younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time during the previous influenza season but only received 1 dose.

5. Pneumococcal polysaccharide vaccine (PPSV).
- Administer to children with certain underlying medical conditions (see *MMWR* 1997;46[No. RR-8]), including a cochlear implant. A single revaccination should be administered to children with functional or anatomic asplenia or other immunocompromising condition after 5 years.

6. Hepatitis A vaccine (HepA).
- Administer 2 doses at least 6 months apart.
- HepA is recommended for children older than 1 year who live in areas where vaccination programs target older children or who are at increased risk of infection. See *MMWR* 2006;55(No. RR-7).

7. Hepatitis B vaccine (HepB).
- Administer the 3-dose series to those not previously vaccinated.
- A 2-dose series (separated by at least 4 months) of adult formulation Recombivax HB® is licensed for children aged 11 through 15 years.

8. Inactivated poliovirus vaccine (IPV).
- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if the third dose was administered at age 4 years or older.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.

9. Measles, mumps, and rubella vaccine (MMR).
- If not previously vaccinated, administer 2 doses or the second dose for those who have received only 1 dose, with at least 28 days between doses.

10. Varicella vaccine.
- For persons aged 7 through 18 years without evidence of immunity (see *MMWR* 2007;56[No. RR-4]), administer 2 doses if not previously vaccinated or the second dose if they have received only 1 dose.
- For persons aged 7 through 12 years, the minimum interval between doses is 3 months. However, if the second dose was administered at least 28 days after the first dose, it can be accepted as valid.
- For persons aged 13 years and older, the minimum interval between doses is 28 days.

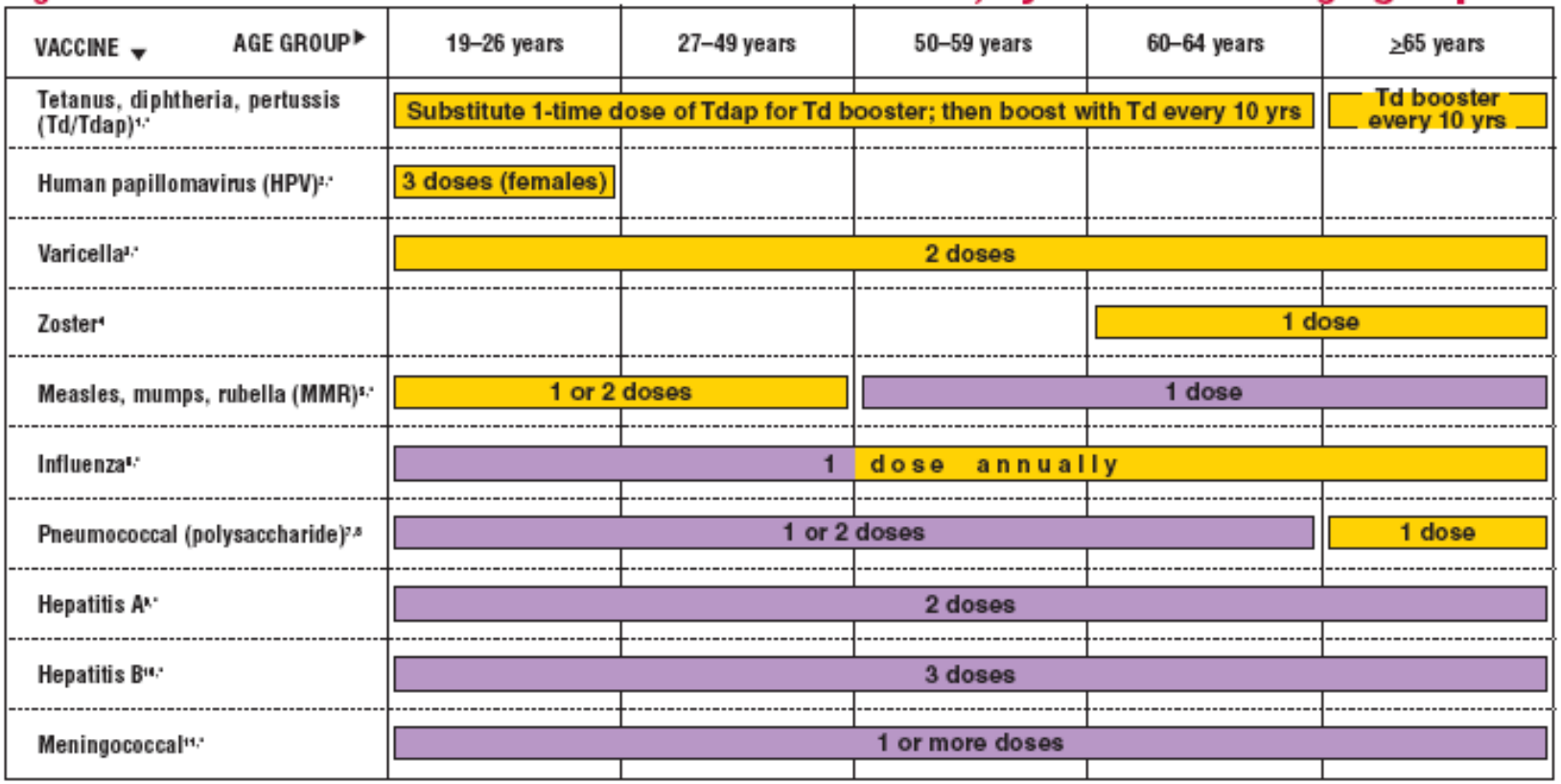
The Recommended Immunization Schedules for Persons Aged 0 Through 18 Years are approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (http://www.aap.org), and the American Academy of Family Physicians (http://www.aafp.org).

Department of Health and Human Services • Centers for Disease Control and Prevention

Recommended Adult Immunization Schedule
UNITED STATES · 2009

Note: These recommendations *must* be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

Figure 1. Recommended adult immunization schedule, by vaccine and age group



*Covered by the Vaccine Injury Compensation Program.

For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection)

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)

No recommendation

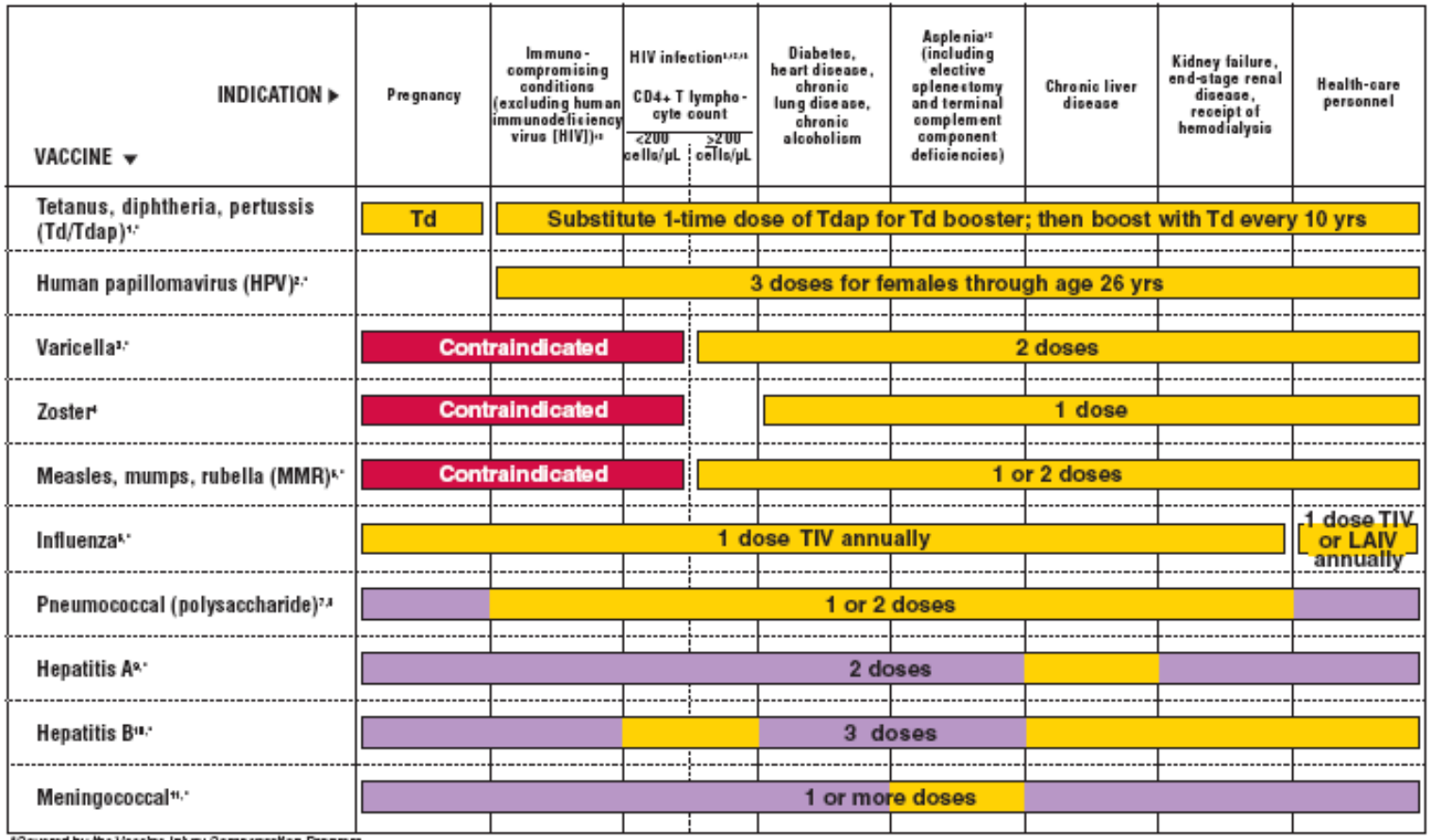
Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at www.vaers.hhs.gov or by telephone, 800-822-7967.

Information on how to file a Vaccine Injury Compensation Program claim is available at www.hrsa.gov/vaccinecompensation or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at www.cdc.gov/vaccines or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 24 hours a day, 7 days a week.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

Figure 2. Vaccines that might be indicated for adults based on medical and other indications



*Covered by the Vaccine Injury Compensation Program.

For all persons in this category who meet the age requirements and who lack evidence of immunity (e.g., lack documentation of vaccination or have no evidence of prior infection)

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)

No recommendation

These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly indicated for adults ages 19 years and older, as of January 1, 2009. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/pubs/acip-list.htm).

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the American College of Obstetricians and Gynecologists (ACOG), and the American College of Physicians (ACP).

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

Td/Tdap

Tetanus, diphtheria, and acellular pertussis vaccination

- Td booster every 10 years
- Tdap should replace a single dose of Td for adults ages 19 through 64 years of age
- Tdap is indicated for postpartum women, close contacts of infants younger than 12 months of age, and all healthcare personnel with direct patient contact

HPV
Human papillomavirus vaccination

- HPV vaccination is recommended for all females 11 through 26 years of age who have not completed the vaccine series
- Gardasil-quadrivalent vaccine covering serogroups
  - 6 & 11 responsible for 90% of genital warts
  - 16 & 18 responsible for 70% of cervical cancer
- The use of HPV vaccine does not eliminate the need for continued Pap test screening, since 30% of cervical cancers are caused by HPV types not covered in the vaccine.

VZ
Varicella vaccination

- Adults 20 years of age and older account for only 7% of VZ cases
- A reliable history of chickenpox has been found to be a valid measure of immunity to varicella because the rash is distinctive and subclinical cases are unusual
- The risk of complications varies with age, persons older than 15 years and younger than 1 year are at increased risk
- All adults without evidence of immunity to varicella should receive 2 doses

Shingles
Herpes Zoster vaccination

- Shingles is the reactivation of the chickenpox virus associated with increasing age and cellular immunosuppression
- The lifetime risk of zoster is estimated to be at least 32%
- A single dose of zoster vaccine is recommended for adults aged 60 years and older regardless of whether they report a prior episode of herpes zoster

MMR

Measles, mumps,rubella vaccination

- Adults born before 1957 generally are considered immune to measles
- Adults born during 1957 or after should receive 1 or more doses of MMR unless
  - they have a medical contraindication
  - documentation of 1 or more doses
  - history of measles diagnosed by a HCP
  - or lab evidence of immunity

A second dose of MMR

- A second dose of MMR is recommended for
  - Recently exposed or outbreak setting
  - Previously vaccinated with unknown type or killed measles vaccine (1963-1967)
  - Students in postsecondary educational institutions
  - Work in a healthcare setting
  - Plan to travel internationally

Influenza vaccination

- Annual influenza vaccination is the most effective method for preventing influenza and its complications
- Annual vaccination is recommended for any adult who wants to reduce the risk of becoming ill with influenza or of transmitting it to others

Vaccination is recommended for all adults in the following groups because these persons either are at higher risk of influenza, or are close contacts of persons at higher risk

- Persons 50 years of age or older
- Women who will be pregnant during the influenza season
- Persons who have chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, cognitive, neurologic/neuromuscular, hematological or metabolic disorders (including diabetes)

- Persons who have immunosuppression caused either by medication or disease
- Residents of nursing homes & long term care facilities
- Health care personnel
- Household contacts and caregivers of children aged less than 5 years and adults over 50 years, with particular emphasis on vaccinating contacts of children less than 6 months of age
- Household contacts and caregivers of persons with medical conditions putting them at higher risk of influenza and its complications

Influenza vaccination

- TIV trivalent influenza vaccine
  - Shot, anyone over 6 months of age
- LAIV live attenuated influenza vaccine
  - 2 through 49 years of age, healthy, not pregnant

- Both contain the same 3 strains of influenza
- Equally safe and effective
- Vaccination against seasonal influenza should begin as soon as vaccine is available and should continue throughout the influenza season

Novel Influenza H1N1

- The potential for addition of a novel influenza A (H1N1) vaccination in addition to seasonal vaccination exists
- 5 vaccine manufactures have produced vaccine
- Clinical trials are underway to determine 1 dose versus 2, spacing between vaccine doses, determine vaccine efficacy and safety

Who will be recommended as priority groups to receive the novel H1N1 vaccine

- CDC's Advisory Committee on Immunization Practices (ACIP) has recommended that certain groups of the population receive novel H1N1 vaccine when it first becomes available
- These key populations include
  - Pregnant women
  - People who live with or care for children younger than 6 months of age
  - Healthcare and emergency services personnel
  - Persons between 6 months and 24 years old
  - People 25 through 64 years who are at higher risk for novel H1N1 because of chronic health disorders or compromised immune systems

H1N1 vaccination continued

- We do not expect that there will be a shortage of novel H1N1 vaccine, but availability and demand can be unpredictable
- Once demand for vaccine for these prioritized groups has been met, providers will begin vaccinating everyone from ages 25 through 64 years of age
- Current studies indicate the risk for infection among persons aged 65 and older is less than the risk for younger age groups. Therefore, as vaccine supply and demand for vaccine among younger age group is met, providers will offer vaccination to people over the age of 65

PPSV

Pneumococcal polysaccharide vaccination

- Medical indications
  - Chronic lung disease (including asthma)
  - Chronic cardiovascular diseases
  - Diabetes mellitus
  - Chronic liver disease, cirrhosis, alcoholism
  - Chronic renal failure or nephrotic syndrome
  - Functional or anatomic asplenia (sickle cell)
  - Immunocompromising conditions
  - Cochlear implants and cerebrospinal fluid leaks

Pneumococcal vaccination

- Other indications
  - Residents of nursing homes or long term care
  - Persons who smoke cigarettes
- Revaccination (who needs 2 doses)
  - One-time revaccination after 5 years is recommended for persons with chronic renal failure, functional or anatomic asplenia and persons with immunocompromising conditions
  - For persons 65 years of age and older, one time revaccination if they were vaccinated 5 or more years previously and were younger than age 65 at the time of vaccination

Hepatitis A vaccination

- Medical Indications
  - Persons with chronic liver disease and persons who receive clotting factor concentrates
- Behavioral Indications
  - Men who have sex with men and persons who use illegal drugs
- Occupational Indications
  - Persons working in a lab research setting
- Other Indications
  - Persons traveling to countries with high rates of endemicity
  - Any person seeking protection from hepatitis infection

Hepatitis B vaccination

- Medical Indications
  - Persons with end stage renal disease, including patients receiving hemodialysis
  - Persons with HIV infection
  - Persons with chronic liver disease
- Occupational Indications
  - Healthcare personnel and public-safety workers who are exposed to blood and other potentially infectious body fluids
- Behavioral Indications
  - Persons with more than 1 sex partner during the previous 6 months
  - Persons seeking treatment or evaluation for a sexually transmitted infection
  - Injection drug use
  - Men who have sex with men
  - Household and sex partners of persons with chronic hepatitis B virus infection

Meningococcal vaccination

- Medical indications
  - Anatomic or functional asplenia
  - Terminal component deficiencies
- Other indications
  - First year college students living in dormitories
  - Microbiologists routinely exposed to isolates of *Neisseria* meningitidis
  - Military recruits
  - Persons traveling to countries in which meningococcal disease is hyperendemic

Resources to Help

- IDPH Immunization Program
  - 1-800-831-6293
  - http://www.idph.state.ia.us/adper/immunization.asp
- Adult Immunization Schedule
  - http://www.cdc.gov/vaccines/recs/schedules/adult-schedule.htm
- Childhood immunization Schedule
  - http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm#printable

Questions??